

**WHAT IS CLAIMED IS:**

1           1.       A computer system for performing expedited startup operations, comprising:  
2           a processor;  
3           a system startup memory coupled to the processor;  
4           a basic input/output system (BIOS) memory coupled to the processor, the BIOS memory  
5 comprising instructions for initiating startup operations; and  
6           a hard disk drive storage device, comprising  
7                 a storage media comprising at least one drive platter for storing a program module  
8 that is loaded in the system startup memory during startup operations,  
9                 a non-volatile memory for storing a copy of the program module stored on the  
10 storage media, and  
11                 a microcontroller for controlling access to the storage media and the non-volatile  
12 memory, said microcontroller configured to retrieve the program module from the non-  
13 volatile memory in response to a read request from the processor if the storage media is  
14 not operational when the read request is received by the hard disk drive storage device.

1           2.       The computer system of claim 1, wherein the non-volatile memory comprises a  
2 cache memory.

1           3.       The computer system of claim 2, where the cache memory comprises a battery-  
2 backed CMOS memory.

1           4.       The computer system of claim 1, where the program module comprises an initial  
2 program load module that is loaded into the system startup memory and executed by the  
3 processor to load an operating system for the computer system.

1           5.       The computer system of claim 4, where the initial program load module  
2 comprises a master boot record, a boot load program and a kernel program.

1           6.       The computer system of claim 1, where the hard disk drive storage device  
2 comprises a RAID array.

1           7.       The computer system of claim 2, where the hard disk drive storage device further  
2 comprises a microcontroller memory for storing a module that maintains coherency between the  
3 storage media and the non-volatile cache memory.

1           8.       The computer system of claim 7, further comprising a threshold table stored in the  
2 hard disk drive storage device, said threshold table containing, for at least one sector of the  
3 storage media, a minimum threshold count value, wherein the module clears a sector in the non-  
4 volatile cache memory only if a cache miss count meets or exceeds the minimum threshold count  
5 value for that sector.

1           9.       A method for retrieving a program module from a first storage device during  
2 startup operations, comprising:  
3           executing BIOS instructions for initiating startup operations;  
4           initiating operating system load operations by requesting a program module for a first  
5 storage device comprised of a first storage media and a non-volatile storage media; and  
6           retrieving said program module from the non-volatile storage media if the first storage  
7 media is not operational to provide said program module.  
8

1           10.      The method of claim 9, wherein the non-volatile storage media comprises a cache  
2 memory.

1           11.      The method of claim 10, where the cache memory comprises a battery-backed  
2 CMOS memory.

1           12.      The method of claim 9, where the program module comprises an initial program  
2 load module that is loaded into a system startup memory and executed by a processor to load an  
3 operating system for a computer system.

1           13.     The method of claim 12, where the initial program load module comprises a  
2 master boot record, a boot load program and a kernel program.

1           14.     The method of claim 9, further comprising maintaining cache coherency between  
2 at least a part of the first storage media and the non-volatile storage media.

1           15.     The method of claim 9, further comprising executing the program module to load  
2 an operating system into a system memory.

1           16.     In an information handling system, a disk drive storage device, comprising:  
2 at least one drive platter for storing a program module,  
3 a non-volatile memory for storing a copy of the program module, and  
4 a microcontroller for controlling access to the drive platter and the non-volatile memory,  
5 said microcontroller configured to retrieve the program module from the non-volatile memory in  
6 response to a read request from a processor if the drive platter is not operational when the read  
7 request is received by the disk drive storage device.

1           17.     The disk drive storage device of claim 16, wherein the non-volatile memory  
2 comprises a cache memory.

1           18.     The disk drive storage device of claim 16, where the cache memory comprises a  
2 battery-backed CMOS memory.

1           19.     The disk drive storage device of claim 16, where the program module comprises a  
2 master boot record that is loaded into a system startup memory and executed by a processor to  
3 load an operating system.

1           20.     The disk drive storage device of claim 16, where the microcontroller executes a  
2 coherence program to maintain coherency between the drive platter and the non-volatile  
3 memory.